What is claimed is:

1. An apparatus for plasticating resinous material, comprising:

a barrel formed of material having a first coefficient of thermal conduction, including a wall extending axially and laterally and having an outer surface and an inner surface, the wall having a thickness formed with mutually spaced holes extending at least partially through the thickness; and

conductors having a second coefficient of thermal conduction greater than the first coefficient, each conductor located in and engaging a hole.

2. The apparatus of claim 1, further comprising:

a rotatable screw located within the inner surface, including an axial core, and a main flight arranged helically on, and extending radially from the core, and including a push surface for urging material to move along the barrel as the screw rotates.

3. The apparatus of claim 1, wherein:

the barrel is of steel; and

the conductors are formed of one of copper, beryllium copper, oxygen-free copper, aluminum, and silver.

4. The apparatus of claim 1, wherein:

the barrel is of steel; and

the conductors are formed of a material having a coefficient of thermal conduction that is at least four times greater than the coefficient of thermal conduction of the steel.

5. The apparatus of claim 1, wherein the holes are mutually spaced and arranged in staggered axially directed rows with adjacent rows being mutually offset laterally, and the holes are staggered in laterally directed columns with adjacent columns being mutually offset axially.

6. The apparatus of claim 1, wherein each hole is any of a first group including a cylindrical hole, a stepped cylindrical hole and a conical hole, each hole including a radial surface extending from the outer surface partially through the thickness toward the inner surface; and

each conductor is any of a second group including a cylinder, a stepped cylinder and a conical cylinder, each conductor being sized to fit within its corresponding hole and to engage the radial surface of said hole.

7. The apparatus of claim 1, wherein each hole is any of a first group including a cylindrical hole, a stepped cylindrical hole and a conical holes, each hole including a radial surface and a radially inner bottom surface, the radial surface extending from the outer surface partially through the thickness toward the inner surface and the bottom surface, the bottom surface having any of a second group including a flat surface, a beveled surface, and a surface having a spherical radius; and

each conductor is any of third group including a cylinder, a stepped cylinder and a conical cylinder, each conductor being sized to fit within its corresponding hole and to engage the radial surface of said hole.

8. The apparatus of claim 1, wherein:

the holes are cylindrical holes including a radial surface extending toward the inner surface from the outer surface into the wall to a depth in the range of 50-65 percent of the thickness; and

the conductors are cylinders sized to fit within the holes and to engage the radial surfaces of the holes.

9. A conductor for conducting heat to or from a cavity of a barrel for plasticating resinous material, the barrel being formed of material having a first coefficient of thermal conductivity and including a wall surrounding the cavity, containing holes having a radial surface directed toward the cavity from an outer surface, the conductor comprising:

a length and a thickness sized to engage a hole and formed of material having a second coefficient of thermal conductivity that is greater than the first coefficient of thermal conductivity of the barrel wall.

10. The conductor of claim 9, wherein the material of the conductor is one of copper, beryllium copper, oxygen-free copper, aluminum, and silver.

11. The conductor of claim 9, wherein the second coefficient of thermal conductivity is at least four times greater than the first coefficient of thermal conductivity.

12. The conductor of claim 9, wherein the second coefficient of thermal conductivity is greater than the first coefficient of thermal conductivity by at least 200 W/m°C.

13. The conductor of claim 1, wherein the material of the conductor is oxygen-free copper having an oxygen content by weight such that its coefficient of thermal conductivity is at least 250 W/m°C.

14. An apparatus for plasticating resinous material, comprising:

a barrel formed of material having a first coefficient of thermal conduction, including a wall surrounding a cavity, the wall extending axially and laterally, having an outer surface and an inner surface, and a thickness containing mutually spaced holes extending at least partially through the thickness; and

a rotatable screw located within the cavity, including an axial core, and a main flight arranged helically on, and extending radially from the core, and including a push surface for urging material to move along the barrel as the screw rotates; and

a plurality of conductors having a second coefficient of thermal conduction greater than the first coefficient, each conductor located in and engaging a hole.

15. The apparatus of claim 14, wherein the barrel is made of steel, and the conductors are formed of one of copper, beryllium copper, oxygen-free copper, aluminum, and silver.

16. The apparatus of claim 14, wherein the barrel is made of steel, and the conductors are formed of a material having the second coefficient of thermal conduction that is at least four times greater than the first coefficient of thermal conduction of the steel.

17. The apparatus of claim 14, wherein the holes are mutually spaced and arranged in staggered axially directed rows with adjacent rows being mutually offset laterally, and the holes being staggered in laterally directed columns with adjacent columns being mutually offset axially.

18. The apparatus of claim 14, wherein:

each hole is any of a first group including a cylindrical hole, a stepped cylindrical hole and a conical hole, each hole including a radial surface extending from the outer surface at least partially through the thickness toward the inner surface; and

each conductor is any of a second group including a cylinder, a stepped cylinder and a conical cylinder, each conductor being sized to fit within its corresponding hole and to engage the radial surface of said hole.

19. The apparatus of claim 14, wherein:

each hole is any of a first group including a cylindrical hole, a stepped cylindrical hole and a conical holes, each hole including a radial surface and a radially inner bottom surface, the lateral surface extending from the outer surface partially through the thickness toward the inner surface and the bottom surface, the bottom surface having any of a second group including a flat surface, a beveled surface, and a surface having a spherical radius; and

each conductor is any of a third group including a cylinder, a stepped cylinder and a conical cylinder, each conductor being sized to fit within its corresponding hole and to engage the radial surface of said hole.

20. The apparatus of claim 14, wherein:

the holes are cylindrical holes including a radial surface extending toward the inner surface from the outer surface into the wall to a depth in the range of 50-65 percent of the thickness; and

each conductor is a cylinder sized to fit within its corresponding hole and to engage the radial surface of said hole.